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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/815,311	03/31/2004	Bo Xia	P17475	7244

25694 7590 10/05/2006

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EXAMINER
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BAKER, STEPHEN M

ART UNIT	PAPER NUMBER
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2133

DATE MAILED: 10/05/2006

Please find below and/or attached an Office communication concerning this application or proceeding:

<b>Office Action Summary</b>	Application No. 10/815,311	Applicant(s) XIA ET AL.	
	Examiner Stephen M. Baker	Art Unit 2133	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 28 February 2005.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-30 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the ~~certified~~ certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>022805</u> . | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Claim Objections*

1. Claims 1, 3, 11, 14, 23 and 28 are objected to because of the following informalities:

Claim 1 has no step of “communicating” despite being claimed as a “method of communicating.”

Claim 3 is prolix.

In claims 3, 11, 14, 23 and 28, “or” apparently should be “and.”

Appropriate correction is required. Suggested corrections are provided below:

3. The method of claim 1 wherein encoding information into one or more variable length LDPC codewords comprises:  
adjusting a size of a default parity check matrix by at least one of puncturing one or more parity bits ~~or~~ and deleting one or more information bits ~~of the default parity check matrix~~.
11. The method of claim 9 wherein decoding the one or more variable length LDPC codewords comprises:  
decoding a codeword based on a parity check matrix having at least one of punctured parity bits ~~or~~ and deleted information bits.
14. The device of claim 12 wherein the different sized parity check matrices are derived from a default matrix by at least one of puncturing one or more parity bits ~~or~~ and deleting one or more information bits of the default matrix.
23. The device of claim 21 wherein the different sized parity check matrices are derived from a default matrix by at least one of puncturing one or more parity bits ~~or~~ and deleting one or more information bits.
28. The communication system of claim 26 wherein the size of the parity check matrix is adjusted by at least one of puncturing parity bits ~~or~~ and deleting information bits of a default sized parity check matrix.

***Claim Rejections - 35 USC § 112***

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claim 30 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 30 apparently should depend from claim 25.

***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1-4, 9-14, 18-28 and 30 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent No. 6,895,547 to Eleftheriou *et al* (hereafter "Eleftheriou").

Eleftheriou discloses arrangements for transmitting LDPC-coded data in a DSL environment, thereby "communicating information." Eleftheriou discloses constructing the LDPC code with a variable codeword size to achieve a variable rate (column 11, lines 4-24), thereby "encoding information into one or more variable length low density parity check (LDPC) codewords."

Regarding claim 2 and 13 and 27, in one embodiment disclosed by Eleftheriou (0079), a plurality of parity check matrices of different sizes are preset and one of the preset matrices is selected for the encoding process. Eleftheriou thus provides for "selecting a parity check matrix from a plurality of different sized matrices, the selected parity check matrix having a size corresponding to a size of information to be encoded."

Regarding claims 3 and 4, Eleftheriou discloses removing rows and columns from a parity check matrix depending of the desired number of information bits and parity bits (0067, 0076, 0078).

5. Claims 1-4, 9-14, 18-28 and 30 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent Application Publication No. 2004/0047433 to Mogre *et al* (hereafter "Mogre").

Mogre discloses arrangements for transmitting LDPC-coded data to a set-top box, thereby "communicating information." Mogre discloses puncturing data and parity bits from the LDPC codewords to achieve a variable rate (0028), thereby "encoding information into one or more variable length low density parity check (LDPC) codewords."

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6. Claims 1-4, 7, 9-14 and 17-30 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent Application Publication No. 2004/0098659 to Bjerke *et al* (hereafter "Bjerke").

Bjerke discloses arrangements for transmitting LDPC-coded data in a wireless LAN (WLAN), thereby "communicating information." Bjerke discloses puncturing the LDPC codewords to achieve a variable rate (0042), thereby "encoding information into one or more variable length low density parity check (LDPC) codewords."

7. Claims 1-4, 9-14, 17-28 and 30 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent Application Publication No. 2004/0268205 to Stolpman (hereafter "Stolpman").

Stolpman discloses arrangements for transmitting LDPC-coded data in a wireless environment, thereby "communicating information." Stolpman discloses puncturing the LDPC codewords to achieve a variable rate (0014), thereby "encoding information into one or more variable length low density parity check (LDPC) codewords."

8. Claims 1-4, 9-14, 18-28 and 30 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent Application Publication No. 2002/0042899 to Tzannes *et al* (hereafter "Tzannes").

Tzannes discloses arrangements for transmitting LDPC-coded data in a DSL environment, thereby "communicating information." Tzannes discloses constructing the LDPC code with a variable codeword size to achieve a variable rate (0034-0035), thereby "encoding information into one or more variable length low density parity check (LDPC) codewords."

***Claim Rejections - 35 USC § 103***

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 5 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Eleftheriou in view of U. S. Patent No. 6,785,863 to Blankenship *et al* (hereafter "Blankenship").

Eleftheriou does not disclose selecting a column by lowest weight when selecting columns to be removed from the parity check matrix. Blankenship teaches that assigning parity bits to lowest weight columns in an LDPC code parity check matrix and modifying an LDPC parity check matrix by removing a column with the lowest weight (column 5, lines 10-27). It would have been obvious to a person having ordinary skill in the art at the time the invention was made to implement Eleftheriou's selection of a column to be removed from the parity check matrix in accordance with the teachings of Blankenship. Such an implementation would have been obvious because the techniques of assigning lowest weight columns as parity bit columns in an LDPC code parity check matrix and modifying an LDPC parity check matrix by removing a column with the lowest weight are taught as being advantageous by Blankenship.

11. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bjerke.

Bjerke does not mention using OFDM for the WLAN link. Official Notice is taken that implementing a WLAN link using OFDM was conventional at the time the invention was made. It would have been obvious to a person having ordinary skill in the art at the time the invention was made to implement the WLAN link specified by Bjerke by means of OFDM modulation. Such an implementation would have been obvious because implementing a WLAN link using OFDM was already conventional.

12. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tzannes.

Tzannes does not mention using OFDM for the DSL link. Official Notice is taken that implementing a DSL link using OFDM was conventional at the time the invention was made. It would have been obvious to a person having ordinary skill in the art at the time the invention was made to implement the DSL link specified by Tzannes by means of OFDM modulation. Such an implementation would have been obvious because implementing a DSL link using OFDM was already conventional.

13. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Eleftheriou.

Eleftheriou does not mention using OFDM for the DSL link. Official Notice is taken that implementing a DSL link using OFDM was conventional at the time the invention was made. It would have been obvious to a person having ordinary skill in the art at the time the invention was made to implement the DSL link specified by Eleftheriou by means of OFDM modulation. Such an implementation would have been obvious because implementing a DSL link using OFDM was already conventional.



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14. Claims 8 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bjerke.

Although Bjerke specifies implementation on a wireless LAN link, Stolpman does not specifically mention implementation on a mobile device link. Official Notice is taken that the advantages of communication with mobile devices and of using a wireless LAN link for enabling communication with a mobile device were well known at the time the invention was made. It would have been obvious to a person having ordinary skill in the art at the time the invention was made to apply the wireless adaptive error correction capability specified by Bjerke to communication with a mobile device. Such an application would have been obvious because the advantages of communication with mobile devices and of using a wireless LAN link for enabling communication with a mobile device were already well known.

15. Claims 8 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stolpman.

Although Stolpman specifies implementation on a wireless link, Stolpman does not specifically mention implementation on a mobile device link. Official Notice is taken that the advantages of communication with mobile devices and of using a wireless link with adaptive error correction capability for enabling communication with a mobile device were well known at the time the invention was made. It would have been obvious to a person having ordinary skill in the art at the time the invention was made to apply the wireless adaptive error correction capability specified by Stolpman to communication with a mobile device. Such an application would have been obvious

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because the advantages of communication with mobile devices and of using a wireless link with adaptive error correction capability for enabling communication with a mobile device were already well known.

### ***Conclusion***


16. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

17. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stephen M. Baker whose telephone number is (571) 272-3814. The examiner can normally be reached on Monday-Friday (11:00 AM - 7:30 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Albert DeCady can be reached on (571) 272-3819. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Stephen M. Baker  
Primary Examiner  
Art Unit 2133

smb